

*Medicine vol 10.*

A  
SHORT ACCOUNT  
OF THE  
DISEASE  
OF THE  
STONE, &c.

Price One Shilling and Six-pence.

SHO RT M E C O U N T  
OF THE  
D I S T R I C T  
OF M A D R A S  
S T A T E M E N T  
OF THE



HENRY BOTSNER DE LA TOUCHE  
Price One Shilling and Sixpence



A  
SHORT ACCOUNT  
OF THE  
DISEASE  
OF THE  
STONE  
IN THE  
HUMAN BODY.

ALSO OF THE  
METHOD of CURE.

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BY  
HENRY BOËSNIER DE LA TOUCHE.  
*Of Little-Chelfea.*

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L O N D O N,

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OF THE  
DISEASE  
OF THE  
STONE.

**T**HE stone in the kidneys and bladder is certainly one of the most grievous disorders which the human frame is subject to. When once the stone is formed and detached from its *nidus*, the paroxysms are so sudden and the attack so violent, that it puts the whole body upon the rack, and the consequence of a long continuance must be a most cruelly grievous and shocking death.

THE regular practice affords no relief to the distressed and miserable patient, but cutting open the body and bladder and taking out the stone when it is lodged there. This practice, though very antient, since *Hippocrates* mentions it, is nevertheless very hazardous, and extremely painful; many recover after it, but very many  
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also die of it; for although the operator may perform his part with the greatest skill, dexterity and safety, yet this operation leaves the body in so weak a state, that the least mismanagement of the patient may easily end in death; and this frequently happens, when the lithotomist himself is not at all to blame. The attempt at first was certainly a bold undertaking; and the weakness that frequently follows it, though never so successfully performed and carried on, besides the extreme pain and hazard of it, is an evident mark that it is a very deficient and improper method of cure.

But bad as it is, the hopes of relief from thence are excluded to those miserable persons who have the stone lodged in the kidneys; and they have no other prospect before them than a miserable and most painful death: For there the stone is out of the reach of the knife; no surgeon is hardy enough to cut open the kidneys and tear it from its lodgment there; the immediate hazard is too great, and the consequences that might attend it, are such that no man in his senses will venture them. I am not however ignorant that this operation has been attempted in *Italy*, and even with success, on an *English* gentleman,



tleman, but that case has not been esteemed by the faculty sufficient to encourage future attempts, and it has been prudently omitted ever since. As the case is however very extraordinary, I will give it here as it is found in the *Phil. Transf.* N. 223. related by Mr. *Charles Bernard*.

"MR. *Hobson*, who was consul for the *English* at *Venice*, having been long afflicted with the stone in the kidney, was at length attacked with a fit of that duration and violence, that it reduced him almost to desperation, and finding no relief from any means that had been used, and being under the greatest extremity of pain imaginable, he addressed himself to *Dominicus de Marchetti*, a famed and experienced physician at *Padua*, imploring of him that he would be pleased to cut the stone out of his kidney, being fixt in his belief that no other method remained capable of relieving him; adding, that he was not insensible of the danger, but that death itself was infinitely more eligible than a life in that misery, under which he had long and did then groan. *Marchetti* seemed very desirous to have declined it, representing not only the extreme hazard, but as he feared the impracticableness of the operation, that it was what he had never attempted,

tempted, and that to proceed to it was in effect to destroy him. But Mr. *Hobson* persisting that if he refused it, he would never desist till he found out one who would do it, *Marchetti* was at length, by his resolution and importunity, prevailed upon to undertake it; and having prepared him as he thought convenient, he began with his knife, cutting gradually upon the region of the kidney affected, so long till the blood disturbed and blinded his work, so that he could not finish it at that attempt. Wherefore dressing up the wound till the next day, he then repeated and accomplished it, by cutting into the body of the kidney; and taking thence two or three small stones, he dressed it up again. From this instant he was freed from the severity of his pain, and in a reasonable time was able to walk about his chamber, having been in no danger from flux of blood or fever. *Marchetti* continued to dress the wound for a considerable time, but was not able to close it up, it soon becoming *fistulous*, from the continual flowing of the urine through the *sinus*; but being in all other respects restored to his former health and vigour, and the matter discharged, being little, he took leave of the professor and returned to *Venice*, under the care and management of his wife, who one morning as she was dressing the sore, fancied she felt something



something hard and rugged as she wiped it, upon which, examining a little more carefully with her bodkin, which served her instead of a probe, she found it to be a stone, of the figure and magnitude of a date-stone, which being removed he never after complained of the least uneasiness in that part.

ABOUT ten years after this he returned to *London*, where the learned Dr. *Tyson* and myself were, by Dr. *Downes*, who had known him formerly in *Venice*, invited to see him. And after we had received this account from himself, he gave us the satisfaction of viewing the sore, which continued open, and permitted me, without any complaint (the callosity being great) to pass my probe so far into the *sinus*, that we concluded it reached into the kidney. The matter it then discharged was but little in quantity, but always diluted with and smelt strong of urine. The orifice would sometimes close for three or four days together, and then the matter made its way through the common passages with the urine, yet without any difficulty or pain. There is no question but that there was a coalition of the kidney and the muscle *psoas*. When we saw it he applied nothing to the orifice but a clean linen rag, which had

had a strong urinous scent. He was then as able in appearance to perform all the functions of life, and to undergo any fatigue as any man of his years, being then, I conceive, upwards of fifty, and was the next day to ride post forty or fifty miles.

THIS, I think, is the first experiment of this kind. Some authors indeed have imagined that *Hippocrates* hath commended the operation; when enumerating the diseases of the kidneys and their cure, he saith, *Quum autem intumuerit et elevatus fuerit, sub id tempus juxta Renem secato, et extracto pure, arenam per urinam cientia, sanato. Si enim sectus fuerit, fugæ spes est, sin minus, morbus homini commoritur.* And *Sinibaldus* in particular upon these words, passionately exhorts the *French* and *Roman* surgeons to make the experiment upon brutes, that they might with greater dexterity and readiness perform it upon men. But with submission, he seems to infer more from these words of *Hippocrates* than they can bear. For it is not sufficient (according to these directions of *Hippocrates*) that we take our indications from the common symptoms of the stone, be they never so grievous, and never so evident, but there must be an *apostem*, and that too is to manifest



manifest itself by a *tumor*. And then indeed the necessity and reason of the operation are so obvious, and the difficulty so little that no man ought to decline it. Nor do we want instances of *apostems* in the kidneys, occasioned originally from the stone there, and manifesting themselves by a *tumor*, upon opening of which *stones* have been discharged with the *pus*, or have been soon after removed; and this is the very case which *Hippocrates* supposes, and upon which he justly advises the practice. But it is my opinion that we have no manner of evidence that nephrotomy (restraining its signification to *cutting into the kidney for the stone*) was practised in his time, or in many ages after. For *Celsus*, although he be very particular in his discourse of cutting for the stone in the bladder, is silent in this matter; and *Galen* who is copious enough upon diseases of the kidneys, especially the stone, mentions it not. And indeed there are no footsteps that I can discover among any of the *Greek* or *Latin* physicians.

THE first light which I can pretend to discover of the operation as practised in our case is amongst the *Arabians*. *Serapion*, who is placed by *Wolfgangus Justus* betwixt the Xth and XIth century, though by *Ren. Moreau*, three hundred

hundred years earlier, gives his opinion of it thus; *Quidam Antiquorum præciperunt Lapidem Renum extrahi cum ferro incidente retro super latus duorum iliorum in loco renum: ego autem video quod hæc audacia est difficilis vehementer, et administratio istius curationis est maxime periculosa et suspecta de morte.* Who these ancients were that advised it, I confess to be beyond my conjecture; unless we may be allowed to say, that he also had misunderstood *Hippocrates*, as some have manifestly done since. Betwixt the XIIIth and XIVth century *Avicen* had much the same opinion both of the practice and the practitioners; *Sunt qui laborant extrahere ipsum per incisionem ilii et per Dorsum: sed est magnus timor in eo, et operatio ejus qui rationem non habet.* The difference of their sentiments being only, that one thought it the undertaking of a madman, the other of a confident fellow, but from *Avicen's* words there is some colour to believe that it was practised in his days, though undoubtedly, if it were, from his talking so slightly of it, it was only by persons of mean character, such perhaps as our *mountebanks*; who having no regard or concern for the lives of men, and little reputation of their own to lose, venture boldly, and sometimes successfully, upon those ways which wary and



and more judicious men avoid. All the rest of their writers are silent.

AMONG the moderns, as well as I can inform myself, *Fr. Rosettus* seems to have been the first who seriously advised this practice. But notwithstanding his zeal to bring this operation into use, and though he urges *Hippocrates's* authority to justify the cutting into the kidney, he is yet so ingenuous as to acknowledge, *præsentē tumore, nec aliter, Hippocratem imperasse Sectionem*. And as plausible as his reasonings may seem, it does not appear that he hath been able to gain many proselytes to his opinion; the sense of those authors who have mentioned it (who are not many neither) being generally against it, and concluding in effect with *Riolanus*, *nisi natura monstrante viam atque præeunte, nefas est, tentare Nephrotomiam.*"

HIPPOCRATES speaks but once, I think, of lithotomy, and then it is to forbid his disciples to practise it, and to leave it entirely to those who had made it their particular profession. *Celsus* speaks next of it, he is the first that describes the operation, and has done it so exactly, that those who have described it after, have only copied his account. He esteemed it very

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hazardous,

hazardous, and in his time it was performed only in the spring, and between nine and fourteen years of age, in the very last extremity possible; where every imaginable thing had been tried. His words are, "*ac neque omni tempore neque in omni ætate, neque in omni vitio id experiendum est: sed solo vere, in eo corpore, quod jam novem annos, nondum quatuordecim excessit; et si tantum mali subest, ut neque medicamentis vinci possit, neque etiam trahi posse videatur, quo minus interposito aliquo spatio interimat; &c., &c.*" His method of cutting was the only one in use till the beginning of the XVIth century, when *John de Romanis*, a surgeon of *Cremona*, introduced another method; and since then others have been again tried with success; but yet with all the improvements and care imaginable it is still a hazardous and painful operation.

THE parts more immediately affected by the stone, are the *kidneys*, the *ureters*, the *bladder*, and the *urethra*; but in paroxysms, or fits of the stone, by the consent of the nerves, the whole body is on the rack, and the patient may with truth be said to suffer from head to foot.

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THE kidneys are situated on each side; the right between the liver and *musculus lumbalis* on the right side; the left between the spleen and the same muscle, which is generally called *psoas*. The sleepiness or numbness which those who have the stone in the kidney do frequently perceive in that thigh on the side of the kidney affected proceeds from the kidneys pressing upon this muscle which is inserted into the lesser *trochanter* of the thigh. The right kidney is lower in men than the left. It is shaped like a bean, but not so flat. They are commonly about five inches long, and three broad, and about one inch and a half thick. They are full of glands and very fine ramifications of blood-vessels, by which the urine is continually secreted from the blood into very small pipes which convey it into the *pelvis*, basin, or cavity that is in the concave side of the kidneys, whence it is carried through the ureters into the bladder.

THERE are two *ureters*, one to each kidney; they are long round pipes, about the bigness of a duck's quill (unless they have been distended to a greater size in calculous cases) which go from the basin of the kidney, with an inflection

almost like an italick / to the bladder, where they are very obliquely inserted two or three inches above the neck of it. They convey the urine from the cavity of the kidneys to the bladder; and the stones that are formed in the kidneys must pass through them into the bladder to be discharged.

THE *urinary bladder* is situated in men immediately upon the last gut; in women upon the *vagina uteri*; its lower part is almost upon a level with the upper; its orifice, or neck, lies sideways, and its bottom, which is very broad, rests upon the last gut, or *vagina uteri*. It is capable to be extended to a great degree, so that the external dimensions of it are liable to great alteration; at the orifice is placed a muscle of circular fibres, which is called its *sphincter*, and which keeps the bladder constantly shut, and so prevents the perpetual dripping of urine, it is only opened, when by the contraction of the abdominal muscles, the bladder is compressed and the urine forced out.

THE *urethra* joins to the neck of the bladder, and is the pipe or tube through which the urine is finally discharged, it is much shorter in women than in men, and much wider, and capable



pable of greater distention, as the operation of extracting stones by dilatation proves.

PHYSICIANS have generally agreed that it is very difficult to determine with certainty when the stone is in the kidneys, in case the patient has not yet voided any ; for the pains of the colic, properly so called, are so much like those of the stone in the kidney as scarcely to be distinguished from it: *Galen* relates that he was thus deceived in his own person, thinking he had the stone when it proved to be only the colic. I find *Riverius* gives the best signs of distinguishing between the two of any author I have met with, I shall therefore borrow from him some of those plain diagnostic signs, which I shall here give, and which, if attended to carefully, are sufficient to determine it with precision.

*First*, THE stone in the kidneys causes a pain in the kidney itself, which extends thence along the ureter to the testicle of the side affected ; and causes also a pain and numbness in the thigh of the side of the kidney affected. None of these signs appear in the colic-pain, that moves about, is frequently higher than the region of the kidney, and attended with grumblings in the bowels and belchings.

*Secondly*,

*Secondly*, THE pain of the stone is generally something less after eating, whereas the colic-pain is greater.

*Thirdly*, IN the colic-pain a discharge by stool gives more ease than in the stone.

*Fourthly*, IN the pain or fit of the stone the urine at first is clear, thin, and transparent, and then afterwards there is a sediment of sand, and sometimes small pieces of stone, whereas in the colic, the urine is thick at the very beginning.

THE stone in the bladder is also very difficult to determine, chiefly in the beginning, when the stone is small; for when the stone is large the signs are then plain enough. I will however set down some signs to know it by. And,

*First*, THERE is a pain in the neck of the bladder and all along the urethra.

*Secondly*, A painful weight in the perinæum, and all along the penis.

*Thirdly*,



*Thirdly*, If the stone be pretty large, a great difficulty to make water, and notwithstanding great efforts, the urine coming away by drops, and in a very small stream, and sometimes involuntarily: Also a frequent desire to make water; and even to go to stool without real occasion.

*Fourthly*, A sudden stoppage of the urine whilst making water, the stone falling on the passage.

*Fifthly*, A freer discharge of the urine when lying down than when standing upright.

*Sixthly*, If the patient being restless and in pain moves and crosses his legs alternately; and the stone being pretty large, cannot ride nor walk through rugged places, or hardly stand upright without an increase of pain. *Celsus* takes notice of that motion and crossing of the legs, and later authors have followed him. And a

*Seventh Sign* is, when a patient, who has been subject to the stone in the kidneys, and has discharged them after painful fits, should upon a time have been eased of a fit without bringing

bringing off any stones; for if after that he be seized with a stoppage of urine, or the above symptoms, the stone did then certainly drop in the bladder, where it remained, and may have become larger.

I know very well that many make the voiding of sand with the urine one of the signs of having the stone; and pretend also to determine whether it be in the kidneys or bladder by the colour of the sand. Whereas nothing is more fallacious, because most men void sand at times, and of different sorts and colours, though not at all afflicted with that disorder. *Cardan* and others have said that they had all their life-time voided sand copiously in their urine, and of different colours, and yet they were perfectly free from that distemper. *Cardan* says this in reference to an aphorism of *Hippocrates*, which gives sand in the urine as a sign of the stone. \* Οκόσοισιν ἐν τῷ ἔρω ψαμμώδεα ὑφίσταται, τετέοισιν ἢ κύστις λιθιά. *Quibus in urina sabulosa subsident, his vesica calculo laborat.* This aphorism has puzzled physicians ever since, and much pains has been taken to support the infallibility of the good old man; for he himself in

\* I have set down here the original, because so much has been said upon this aphorism.



in another place blames physicians for looking upon sand as a sign of the stone. *Beverovicus* and *Salmasius* have each written a volume for and against this aphorism; and I do not see it is likely to be understood at any time, if, as *Galen* says, some person envious of the great reputation of *Hippocrates* should have foisted in this aphorism among his others, he has been the cause of a deal of trouble to many critics, with very little satisfaction.

CERTAIN it is that all men have within them the seed of the stone, and when the parts of the body which secrete or retain the urine are weakened, or have lost their proper tone and power of action, then this seed has liberty to unfold itself; and so a stone is formed, which being very small at first grows large by accretion.

THE disease of the stone is twofold, if we consider it both as to the cause and the effect; properly speaking the stone, when quite formed in the body, is no disease; it is the effect of the disease which lies in the disability of some parts of the body to perform their functions; which disability may be only for a certain time, as is the case of colds, fevers, and other temporary

porary disorders; or it may be an established weakness, as it happens in palsies, gout, &c. for it happens sometimes, and perhaps frequently, that a stone is formed in the body, and after a time never increases more, so that in truth the disease is ceased; but the effect remains, that being of such a sort, that if the stone be too large to pass the vessels, nature cannot discharge herself of her burden; whereas in other diseases, when a crisis is obtained, the accumulated peccant matter is discharged through the pores, or by stool, or by urine, &c., &c. and so nature is relieved of her burden. The disease therefore of the stone is particular in the difficulty of removing the effect even after the cause is ceased. Nature not being able to do that in the usual way, remedies must be applied that will separate the stone and disjoin its parts so minutely, as to make it easy to pass through those passages by which it must come out of the body.

THE human body is in this as in some other respects different from that of other animals. The disease of the stone is peculiar to man, and happens but accidentally and as an extraordinary case to other animals; I mean the stone in the kidneys and bladder; for as to other particular parts



parts of the body some animals usually, or at least very commonly have it, and those stones are used in physic, viz. the bezoar, the stones in the gall of oxen, &c. It is true that a particular sort of goat in the *Pyrenean* mountains have sometimes a stone found in their bladder, but I judge that in none of these cases it is fatal as in the human body. When a stone is found in some one animal about us, among the great numbers that are killed, it is deemed so extraordinary as to merit being recorded. There is mention in the *Philosophical Transactions* of a stone found in the body of a *Spanish* gelding, fastened to the spine of the back near the kidneys, weighing four pounds; and of a stone found in the body of another horse at *Lambeth*, near the bladder, weighing above four pounds; and of one found in the stomach of a horse in *New-England*, weighing above five pounds; the weight of which had torne the stomach, and so killed the beast: how they were formed there that is not easy to account for; but *Lemery* mentions a large stone as big as an ordinary melon found in the bladder of a mare weighing twenty-four ounces. These are very extraordinary cases, and happen extremely seldom; but as the case of a *spaniel* dog, who might probably breed the stone in his bladder through

some error in the operation of castration which was performed upon him is very remarkable, and the more so from his sagacity in knowing how to relieve himself in part from his difficulty to discharge his urine, I shall therefore give the relation at large :

“ A pretty spaniel in *Italy*, two palms and a half high and an excellent setter for quails, being kept tied, as such dogs are wont to be, would rather have burst than urine or dung in the place where he was kept. By reason of his aptness to bite, he was cut when he was five years old, and two years after that he begun to urine with much difficulty : Whereupon, as often as he was let loose he ran presently into the garden, and fell to eat of pellitory of the wall and fig-leaves ; which *Matthiolus* and others observe to provoke urine and to cleanse the reins. This disease continued upon him for five years together, sometimes with that violence that his master had him syringed and anointed with oil of scorpions, and used other remedies to help the poor creature. At length he died at twelve years of age, and being opened, there was found in his bladder a stone, weighing an ounce, of an irregular figure, white, yet here and there with some reddish specks,



specks, and in the bottom of the bladder was found store of small white gravel, and in the mouth of the urinal passage a stone as big as a great pine-kernel, white and tender. The rest of the body was all swelled."

THERE are accounts of two very large stones found in the bladder in *Scotland*, which are surprising; one taken from out of the bladder of a gentleman near *Aberdeen*, after his decease, which weighed thirty-two ounces, and another from another man near that place which weighed two pounds three ounces and six drams. But the largest I have ever heard of is mentioned by Mr. *Tolet* in his treatise of lithotomy; it was found in the bladder of a man of forty-eight years of age, and weighed fifty-one ounces; I think he was cut for it, and died under the operation. But what is even more remarkable than this monstrous size is, that it was like white marble both in colour and consistence. Mr. *Dobyns*, surgeon and lithotomist to *St. Bartholomew's Hospital*, on opening the body of Mr. *Lawrence*, a gentleman of about forty years of age, who had for near twenty years a complaint in his kidneys, found in each kidney a stone of an extraordinary size, besides one hundred smaller. There are very many extraordinary relations, by various authors, of

of large stones, as well in the kidneys as in the bladder, and remarkable cases of stones in many other parts of the body also; particularly of a poor woman near *Norwich*, who with great pain voided five large stones *per Anum*, after being frequently troubled for fourteen years with pains in her side and stomach; the largest stone weighed above two ounces three quarters, and measured eight inches round; and of another in *Oxfordshire* who voided one *per Anum* that weighed eight ounces and a half, and measured ten inches and a half round.

I have said that this distemper is peculiar to man; I may add farther, that it is so particularly his case that every human person has in them the seed of the stone, and that whenever the parts that secrete the urine lose their power of separating it properly, and of transmitting and discharging it in time; then this seed has an opportunity of manifesting itself, and of becoming a real stone; which, if the weakness of the parts continue, will sometimes increase to such a size as to bring on a most terrible death. This seed is contained in the urine, and ought to be discharged with it in the form of water; and so it is in all persons that are not troubled with the stone. It generally shews itself as a red sand within



within about twenty-four hours, though sometimes it is a longer time, after the urine is voided; it is so light, and is formed so suddenly, as to adhere to the sides of the urinal, in the same manner as at the bottom; did it not adhere to the sides as soon as it is formed, it would sink to the bottom, and not cleave to the sides, as we see it, as high as the very top of the urine; this, upon urine being repeatedly made in the same vessel, and being left on, is that scurf or fur which is seen to adhere so firmly to the sides of urinals when servants neglect to clear it off; let this scurf or fur be suffered to remain, and fresh urine be repeatedly made in the same vessel, and each time let it stay in it above four-and-twenty hours; after a considerable length of time it will be grown so thick, that it will form a substantial crust of stone round the vessel, which when got off will be found to be of a hard texture, and in the analysis of it will appear to be compounded of the same principles, and to give the same sort of oil, &c. as the stone that comes from the bladder or kidneys; as evident a mark as can be, that it is the same thing. This calculous matter is peculiar to human urine, and is always found in it more or less. In healthy bodies it is wholly cast away in the urine, in the form of water; but in persons who are obnoxious to this disorder, a part of it, more or less, is separated

parated from the urine in the kidneys and bladder, and becomes gravel and a stone, and so long as that indisposition lasts, so long is more of this calculous matter separated in the body, by which the stone is increased in size, more stones and gravel formed, and the patient exposed to great misery. The power of the body to perform its several various functions is wonderful; were it otherwise few men would escape this disorder.

IF any foreign substance by some accident gets into the bladder, it is soon coated with this calculous concretion, which adheres to it as it does to the sides of urinals, and in proportion to the time that substance remains in the bladder the crust upon it becomes thicker, and it may by that means make a large stone. *Sir Hans Sloane* has observed this, his words are :

“ IT is very common that when any extraneous solid substance gets into the bladder, there is either attracted to it, or adheres to and surrounds it, a tartareous calculous concretion which assumes the figure of the said body now in its center, as a nucleus.

“ THERE was a soldier cut in *St. Thomas's Hospital* for the stone, which, when taken out, was found



found to cover a musket-bullet that had been shot into his bladder, where it was covered by a calculous concretion.

“ I have a silver bodkin which a gentlewoman used for her hair, and thinking with it to thrust back a stone that was engaged in the neck of her bladder, it slipped into it, and the calculous matter gathered on the larger end into a stone of an oblong figure and equal thickness of half an inch all round the bodkin.

“ I have likewise a common pin, which by some means or other had got into the bladder of a young woman, and was there coated all over by a calculous matter; but having occasioned a fistulous ulcer in her groin, it was discharged thence with the matter of the fistula.”

Just the same thing will happen if these things are put into the vessel containing the urine of any human person whatsoever; provided it be treated as I have said above, it will by degrees get a calculous crust on it; and if the experiment be rightly managed it will in time form so large a coat over it as to make a stone; which amounts to a demonstration that all human urine has in it the seed of the stone.

THE human calculus is generally the lightest of all stones, as it, for the most part, contains a great quantity of air.

THE urine, how clear soever when first voided, after a time forms this calculous matter; for when the urine is thick, it is not the gross matter that adheres to the sides, that gross substance settles at bottom, and is easily washed away; that is not the basis of the stone, it is not the matter whence it is formed; for the seed of the stone is absolutely hid till it is quite formed, and lies concealed under the appearance of a transparent water. The philosophers will perhaps laugh at my saying that so clear a water should become a stone: I am no stranger to the many arguments they use to elude the discovery of their ignorance; for these very wise men have neither sense, modesty, nor humility enough to acknowledge themselves unable to account for any operation of the natural world; nothing in the whole creation is hidden from them; no transformation of things but they can account for, and explain with many words, which the by-standers unfortunately understand as little as themselves; they have not the honesty to say, as the *Hea-*  
*then*



*then* philosopher of old, "All I know is that I know nothing." No doubt they can tell exactly why a certain degree of fire will dry salt, and a greater degree of it will bring it into a liquid; and how water will dissolve it into a clear liquid like itself, and that so intimately as not to be recovered into its former state but by evaporating the water; the same also of sugar. Sulphur melts in the fire into a liquid, and hardens when removed from it, &c, &c. Stones and ashes being melted become transparent and make glass, which, though liquid in the fire, becomes when removed from it a very hard body; and linen rags, being beaten with water in a mill, become paper; and the common sea-coal neither melts like salt in water, or like sulphur in the fire, yet it evaporates by fire, and leaves very little behind. How all these things are done many men pretend to know exactly, but find it difficult to teach clearly to those people who are so stubborn as to receive no combination of words for an explanation unless comprehensible. Be all this as it may, what I affirm, that the stone in the human body is formed out of what appears to be clear water, and not out of any gross substance, such as manifests itself presently after it is voided, or which settles heavily at the bottom and is cast away

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by shaking it is strictly true; and what I can demonstrate to any candid person. I do not mean by this to deny that the human calculus may be dissolved into a thick mud; I am now only saying whence it is formed; and therein I know I do not mistake when I assert that the human calculus is formed of a substance, which, till it is formed, lies concealed under the appearance of a *clear limpid water*, and that when it manifests itself it becomes immediately a hard stone, which increasing in the same manner by accretion does sometimes make very large stones, and some of a monstrous size. The seed therefore of the stone is in all human urine, none excepted, in the form of water.

I must add, that it is a mistake that a præternatural heat in the parts does in some measure occasion it; for we see it formed out of the body long after the urine is quite cold, and in cold weather in a cool place; the heat of the parts is owing to the irritation of the nerves caused by the stone when formed; it is therefore an effect of this disorder, not the cause; it is posterior to it, not prior.

WHAT I have here said of the formation of the stone in the body, will not appear so extraordinary



nary to those who will consider, that those very fine juices which the body separates from the aliment we take in, in the form of a very fine vapour, and so passes through fine glands into the lacteal vessels, &c. are afterwards, in the different parts of the body, appropriated to the nourishment of each particular part, and so assimilated to it, and become bone, tendon, muscle, &c. and the *stonifying*\* quality that nourishes the teeth, will even assimilate the food that cleaves to and remains long about them; which becomes hard and stoney, infomuch that the dentists scale it off frequently with difficulty; but where there are no teeth in the mouth for nature to nourish, there that power and quality is not exercised, and nothing of this sort happens.

I come now to that which is of the greatest consequence, and the most material of all; I mean, the cure of this disorder; for to a man afflicted with the stone, a true method of curing is beyond all the treasures and reasoning of human wisdom. And here I find the physicians universally acknowledging themselves to be at a loss;

\* I say *stonifying*, because a tooth is not a meer bone; it is of a middle nature between a bone and a stone; so is ivory; and what is formed against them is absolutely stoney.

loss; the great number of receipts they give for it, is a plain mark that they can depend little on any; and their concluding, as they generally do, that if after all, the disease is obstinate, and does not yield to those methods, the patient must at last try lithotomy, is plainly giving up the point, and declaring, if not an inability, at least a very great doubt of the power of the medicines they propose.

THE cure of this disorder is twofold, as is the disease. First the symptoms or effect must be removed, and afterwards, those parts which by their weakness or defect occasion this disorder, must be so strengthened and restored as to prevent it in future.

MUCH contention has been among physicians about the possibility of dissolving the stone whilst in the human body; when it is out of it, it is easily dissolved by many preparations, but these are so sharp and corrosive, that they dare not be thrown into the stomach, they would tear the body to pieces; other medicines that can dissolve it, though more mild, do lose too much of their power, and are too much changed and altered before they reach the bladder or kidneys, and to give these in large quantities would also

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be dangerous. Lemon-juice is much recommended by several, yet *Riverius* says positively, that taken in any quantity, or often, it will give the thrush. *De succo limonum, hoc notandum est cautum esse debere illius usum, quia frequentius aut nimia copia exhibitus aphtas facit in ventriculo, unde enteria succedit.* Lime-water has of late been much recommended, and I believe it a good medicine, but it is far short of curing; for I know a gentleman who took it for years very regularly, and yet had after that several bad fits of the stone; besides, it is in one respect hurtful, because it hurts the body very much; it is also very troublesome, from the constraint of diet to which the patient must submit; no fermented liquor at all, no fruit, nothing acid, &c.

THE very possibility of effectually dissolving the stone in the body has been doubted, from the difficulty of coming at it; many people affirm there is no powerful menstruum for it, but what will on the other hand hurt the intermediate parts, but will tear and destroy the stomach and other vessels through which it must pass. This is easily refuted by the old answer, that if a proper menstruum be found, it may easily dissolve the stone, and have no effect at all on the other parts of the body, as we see *aqua fortis* corrode

corrode and dissolve iron, and yet have no effect on so soft a body as wax. The possibility of such a menstruum is therefore beyond all doubt; but then it is again said, that it must, from the course it must take, be so altered before it can come at the kidneys or bladder that its virtue and powers must be lost; and therefore it cannot be able to perform that which it could do in its natural state before it had undergone that change. This seems more plausible; but in answer to it, I would observe, that upon drinking certain fermented liquors, mineral waters, and of particular springs, the person is obliged to make water so speedily, and that is so colourless, that it is manifest it must have come into the bladder some other way than by that long and tedious way of secretion from the blood through the kidneys; nay, when men drink hard a long time together, their urine, which is then much and frequent, cannot at that time be secreted in the kidneys, and so conveyed to the bladder; there must be some other shorter way to the bladder not yet discovered. The thing has been tried on a dog; his bladder has been emptied, and the ureters tied up, and the dog made to drink good store of water, and left for near three hours in the least violent posture that his ligatures would permit; afterwards the



the bladder being pressed there issued out of it a pretty quantity of urine, and the ureters seemed to be a little swelled above the ligatures. This experiment confirms, I think, the foregoing conjecture.

It may very well be, that a medicine which does not dissolve the stone out of the body, may, when taken into it, become so altered by mixing with the juices of it as easily to dissolve it within the body. The general pursuit for a dissolvent seems to me to have been improperly managed; experiments have been made with such corrosives, which though they succeeded, no good could be derived from them, because it was too hazardous to venture to administer them to any purpose, however qualified; and all experiments have been to seek what would dissolve it out of the body; whereas the juices of a living body when mixed with any liquor thrown into it, may, nay must in many cases alter it beyond the conception or judgment of any man; as we see the mixture of different liquors alters very much their qualities. As therefore whatever is to operate in the kidneys or bladder may in its passage meet with many different juices, it may, by those very means, acquire the power of dissolving the stone there, the great thing sought.

WHAT is therefore required in a medicine to cure the stone is, that it be perfectly harmless to all the parts of the body, that it strengthen and comfort those parts which secrete, convey, and contain the urine in the body, and lastly, that it dissolve the stone, and bring it all off with ease; if to this be added, that it requires no constraint in diet, it may then with truth be called a most noble and excellent medicine; of greater power than man could well expect or hope for.

AFTER what I have here shewn or said, I should think myself greatly to blame did I not in this place inform the public, that such a great medicine I now possess, and have attained, after having long sought it before in vain. It is, when properly adapted to each particular case, and rightly administered, extremely innocent to all the parts of the human body, as much so as common water, nay, it is very salutary, it comforts and strengthens those vessels that serve to secrete, to convey and to contain the urine, it dissolves the stone, and carries it off gently, and without pain, and will effectually preserve from a relapse, and is so safe, that judiciously managed it may be given without the least danger in a complication of disorders,

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at all times, and in all circumstances. It will cure it in old people as well as in young, though *Riverius* says, after *Hippocrates*, that this disorder is incurable in old age: *Gum vitia renum et vesicæ in senibus difficulter curentur, ex Hipp. Aphorif. 6. sect. 6. Calculus renum in ea ætate, curatu difficilis, vel potius INSANABILIS est.* What I have said of this medicine is the truth, and it will be found so upon trial.

I have no doubt in my own mind, but it will also safely and speedily cure the stone in the gall-bladder; a most grievous and terrible disorder. When nature attempts to relieve herself, and so discharge the stone from thence, it has to pass through the *meatus cysticus*, and *ductus communis* into the *duodenum*. This passage not being naturally larger than a goose-quill, and the stones being frequently much larger, the excessive pains this effort causes, not only to those parts but to the rest of the body is better known to those who have felt it than it can be described by me. All I have to say in conclusion of the whole is, that a medicine that can relieve man in the cruel circumstances which these distempers bring on, and in a manner so safe, easy, gentle and agreeable, cannot but be esteemed by thinking people to be invaluable.

